



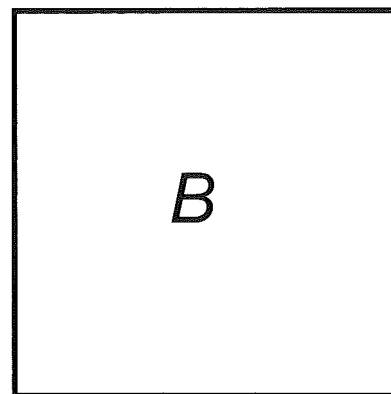
Perfect Squares and Square Roots

Use color tiles to find the area and the side length of each square.

A

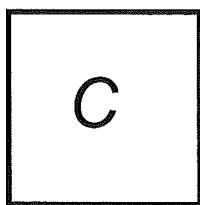
Area = _____ in.²

Side length = $\sqrt{\text{_____}}$ = _____ in.



Area = _____ in.²

Side length = $\sqrt{\text{_____}}$ = _____ in.



Area = _____ in.²

Side length = $\sqrt{\text{_____}}$ = _____ in.

D

Area = _____ in.²

Side length = $\sqrt{\text{_____}}$ = _____ in.

How does the side length of a square compare to the area of the square?



Unit 6 Lesson 1

Estimating Square Roots

- For each of the squares below, estimate the side length to the nearest tenth of a centimeter based on the area.
- Then use a ruler to find the actual side length.

$$\text{Area} = 28 \text{ cm}^2$$

Estimate: _____ cm

Actual: _____ cm

$$\text{Area} = 14 \text{ cm}^2$$

Estimate: _____ cm

Actual: _____ cm

$$\text{Area} = 35 \text{ cm}^2$$

Estimate: _____ cm

Actual: _____ cm

$$\text{Area} = 45 \text{ cm}^2$$

Estimate: _____ cm

Actual: _____ cm

$$\text{Area} = 70 \text{ cm}^2$$

Estimate: _____ cm

Actual: _____ cm

$$\text{Area} = 20 \text{ cm}^2$$

Estimate: _____ cm

Actual: _____ cm



Irrational Numbers Puzzles

- Place the 0 – 9 tiles on the puzzle to make each statement true.
- Each tile may be used only one time.
- Cross out each number at the bottom of the page after it has been used.
- Once you have found the solution, write the correct number in each box.

Puzzle 1

$$\sqrt{10} \approx \square . \square$$

$$\sqrt{80} \approx \square . \square$$

$$\sqrt{42} \approx \square . \square$$

$$\sqrt{49} = \square . \square$$

$$\sqrt{18} \approx \square . \square$$

0	1	2	3	4	5	6	7	8	9
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Irrational Numbers Puzzles

Puzzle 2

$$\sqrt{8} \approx \boxed{}.\boxed{}$$

$$\sqrt{90} \approx \boxed{}.\boxed{}$$

$$\sqrt{53} \approx \boxed{}.\boxed{}$$

$$\sqrt{37} \approx \boxed{}.\boxed{}$$

$$\sqrt{16} = \boxed{}.\boxed{}$$

0	1	2	3	4	5	6	7	8	9
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Independent Practice

To estimate the value of an irrational number such as $\sqrt{6}$:

- Determine between which 2 consecutive numbers $\sqrt{6}$ would be located on a number line.

$\sqrt{6}$ would be located between 2 and 3 since 2^2 is 4 and 3^2 is 9.

- Think about its placement on a number line. Would it be closer to the smaller number or the larger number? Is it about halfway between the numbers?

6 is closer to 4 than it is to 9; so $\sqrt{6}$ will be less than halfway (2.5). A good estimate for $\sqrt{6}$ would be 2.4.

You can check your estimate by squaring it. 2.4^2 is 5.76 which is close to 6.

Estimate the value of each irrational number to the nearest tenth.

1 $\sqrt{51}$

2 $\sqrt{33}$

3 $\sqrt{76}$

4 Dina estimated $\sqrt{105}$ at 10.5. Is her estimate reasonable? Justify your answer.

5 Arrange $\{\sqrt{70}, 8.1, \sqrt{79}, 8.5\}$ in order from greatest to least.

6 Jocelyn was asked to draw a square that had an area of 20 square centimeters. What will be the side length of the square to the nearest tenth of a centimeter?

Estimate the value of each irrational number to the nearest tenth.

7 $\sqrt{65}$

8 $\sqrt{7}$

9 $\sqrt{95}$

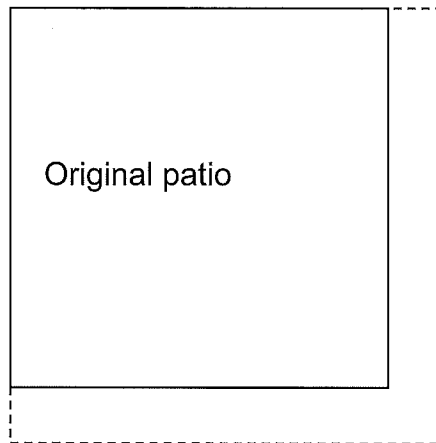


Unit 6 Lesson 1

The Patio

The square patio at a certain restaurant has an area of 100 square feet. The owner is planning to enlarge the patio. The enlarged patio will still be a square and will have an area of 132 square feet. By how many feet, to the nearest tenth, was the side length of the original patio increased?

Restaurant Patio



The dashed lines represent the boundary of the new patio.

FOR TEACHER USE ONLY:

a. YES NO Student arrives at a correct solution?

	4	3	2	1
b. Conceptual Knowledge				
c. Procedural Knowledge				
d. Communication				



- 1 The area of a square is 135 square feet. Which best represents the length of a side of the square?
- A 11.1 ft
B 11.6 ft
C 12.1 ft
D 12.6 ft
- 2 Jayson was asked to name an irrational number that is closest to 6. Which irrational number should Jayson choose?
- A $\sqrt{27}$
B $\sqrt{32}$
C $\sqrt{37}$
D $\sqrt{42}$
- 3 Which irrational number has a value of approximately 7.2?
- A $\sqrt{48}$
B $\sqrt{52}$
C $\sqrt{56}$
D $\sqrt{62}$
- 4 The area of a square is 27 square inches. Which of these is closest to the length of each side of the square?
- A 6.2 in.
B 5.7 in.
C 5.5 in.
D 5.2 in.